Beringian Research Notes

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Figure 1: Beringian caribou. Detail of a painting by George Teichmann.

Ancient Caribou

Caribou (or reindeer) (*Rangifer tarandus*) is the only member of the deer family (Cervidae) adapted to the harsh arctic and subarctic environments of northern North America and Eurasia. Caribou originated from South American deer of Tertiary age (65 to 2 million years ago) and has undergone a long journey in terms of physical, behavioural and geographical adaptation to its present habitat. With the horse (*Equus* sp.), steppe bison (*Bison priscus*) and woolly mammoth

(*Mammuthus primigenius*), it is one of the commonest species known from Ice Age Beringia (1). However, unlike horses, steppe bison and mammoths, caribou survived the period of megafaunal extinction that occurred toward the close of the last glaciation about 10,000 years ago. This highly-adaptable boreal deer has been of great economic importance to people throughout their history in the North.

Caribou are gregarious, medium-sized deer with rather long legs, large hooves and broad muzzles that are densely covered with hair except for a small oval patch. Appearances differ slightly among the many living subspecies. Males weigh about 110 kg for the small Peary caribou to about 300 kg for Alaskan barren-ground caribou. Generally adult females are about 10 to 15 percent smaller than adult males. The forest-dwelling woodland caribou have the darkest pelts and Peary caribou the lightest. Bellies are paler. The species is unusual in that generally both sexes have antlers, although those of adult females are much smaller. Indeed this feature, along with the relatively simple crests on the cheek teeth, suggest the primitive nature of caribou. Main beams of the antlers are cylindrical to flattened in cross-section and curve backward and upward, usually having a large brow tine. Males shed their antlers after the rut (mating period) and these, along with limb bones and teeth, are the most common caribou fossils found in Pleistocene (2 million to 10,000 years ago) sediments. Hooves, because of their great breadth, are well adapted to movement over spongy muskeg and snow. Other characteristics of the hooves promote a non-skid surface on snow and ice. Caribou migrate to take advantage of seasonally available food supplies: caribou feed in summer on grasses, sedges, mushrooms and low shrubs; in winter, lichen is a staple food. Cows about to give birth disperse when their traditional calving grounds are reached. Seasonal movements of the more sedentary forest-dwelling woodland caribou and the High Arctic Peary caribou are smaller than the migratory barren-ground caribou and other woodland caribou.

Analysis of caribou cranial and dental characters show that they belong to a group of relatively large New World deer (Subfamily Odocoileinae, including *Blastoceros, Hippocamelus* the two largest South American genera and *Navahoceros).* The South American genera seem to be most primitive and led to the two North American groups *Navahoceros* and *Rangifer,* the former being a "mountain deer" with short, stocky limbs and simple three-tined antlers, which is now extinct. The oldest-known caribou are from the Early Pleistocene of Eastern Beringia (e.g., Fort Selkirk, Yukon, about 1.6 million years old, and Cape Deceit, Alaska, probably slightly younger), and presumably originated there. Apart from the Fort Selkirk specimen, some of the oldest Yukon caribou finds are from Old Crow Basin. Fossils have been excavated from near the bottom of the high bluffs that may be of Illinoian age or older, as well as from higher deposits probably of last interglacial age (about 130,000 years old). Three other Yukon specimens are of interest: a tibia (lower leg bone) fleshing tool from Old Crow Basin, originally radiocarbon-dated to about 27,000 years ago (now considered to be only about 1,300 years old!) that was largely responsible for the "great bone rush" in that

1 Unglaciated parts of northeastern Siberia, Alaska, Yukon and adjacent Northwest Territories, as well as the floor of the Bering Sea which was exposed with the fall of sea levels during the Ice Ages.

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Figure 2: Realistic depiction of a reindeer bull in Chauvet Cave southern France about 40,000 years old.

region; a partial beam of a caribou antler from Old Crow Basin with four polished facets on the base (interpreted as a pestle) radiocarbon-dated to about 25,000 years ago; and a caribou antler "punch", used to flake stone tools, from the Dawson City area radiocarbon-dated to about 11,300 years ago. South of the Laurentide ice sheet, in the continental United States, caribou remains dating to the peak of the last glaciation are found in a broad region paralleling the ice front, along with other members of the "arctic" fauna like muskoxen, lemmings and woolly mammoths. A cranial fragment older than 36,830 years recovered near the North Carolina/Virginia border shows that some caribou reached this region before the last peak of the last Ice Age.

It is remarkable that North American caribou occupied three major ice-free refugia (unglaciated refuges for plants and animals) of likely significance for American biological and linguistic differentiation: Beringian caribou produced the barren-ground race; the now-extinct Dawson caribou (*Rangifer dawsoni*) occupied the Northwest Coast refugium, dying out about 1910 on the Queen Charlotte Islands; and the southern refugium produced the woodland caribou. In addition, the small, pale Peary caribou of the Canadian Arctic Islands may have originated in a western Banks Island refugium. Caribou had reached northernmost Greenland more than 40,000 years ago, but there is no evidence that they survived there during the last glaciation. Genetic studies indicate that, of five major lineages of North American caribou, the most ancient include woodland caribou from southern Canada. Northern populations tend to be concentrated in another lineage.

For tens of thousands of years, humans have used their knowledge of caribou movements and habits to hunt them mainly for food and clothing. Reindeer were

carefully observed by Paleolithic artists who sometimes depicted them in the cave art of Western Europe. Among the oldest known examples of cave art, going back about 40,000 years, are several lively depictions of reindeer from Chauvet Cave in southern France (Figure 2). Much more recently reindeer were domesticated in Eurasia, and stocks were transplanted to North America. Despite their long history of predation by wolves and people in both Eurasia and North America, caribou still survive in both wild and domestic herds.

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